

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

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| Applicant's or agent's file reference C1-A0505P | FOR FURTHER ACTION | See item 4 below |
| International application No. PCT/JP2006/309890 | International filing date (<i>day/month/year</i>) 18 May 2006 (18.05.2006) | Priority date (<i>day/month/year</i>) 18 May 2005 (18.05.2005) |
| International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237 | | |
| Applicant THE UNIVERSITY OF TOKUSHIMA | | |

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|-------------------------------------|--|---|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| 1. | This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a). | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | This REPORT consists of a total of 5 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead. | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. | <p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 80%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. II | Priority | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VI | Certain documents cited | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | | |
| 4. | The International Bureau will communicate this report to designated Offices in accordance with Rules 44 <i>bis</i> .3(c) and 93 <i>bis</i> .1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44 <i>bis</i> .2). | | | | | | | | | | | | | | | | | | | | | | | | |

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| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Date of issuance of this report 19 November 2007 (19.11.2007) |
| Facsimile No. +41 22 338 82 70 | Authorized officer <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Masashi Honda</div> |
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

TRANSLATION
PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing
(day/month/year)

Applicant's or agent's file reference

C1-A0505P

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2006/309890

International filing date (day/month/year)

18.05.2006

Priority date (day/month/year)

18.05.2005

International Patent Classification (IPC) or both national classification and IPC

**A61K39/395(2006.01), A61K38/21(2006.01), A61P1/04(2006.01),
A61P1/16(2006.01), A61P3/10(2006.01), A61P7/06(2006.01),**

Applicant

THE UNIVERSITY OF TOKUSHIMA

1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the opinion |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

| | | |
|--|------------------------------------|--------------------|
| Name and mailing address of the ISA/JP | Date of completion of this opinion | Authorized officer |
| Facsimile No. | | Telephone No. |

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2006/309890

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
- ☒ the international application in the language in which it was filed
- ☐ the translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rule 12.3(a) and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
- a. type of material
- ☒ a sequence listing
- ☐ table(s) related to the sequence listing
- b. format of material
- ☐ on paper
- ☒ in electronic form
- c. time of filing/furnishing
- ☒ contained in the international application as filed
- ☐ filed together with the international application in electronic form
- ☐ furnished subsequently to this Authority for the purposes of search
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/JP2006/309890

| Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | |
|---|--|------|-----|
| 1. Statement | | | |
| Novelty (N) | Claims | | YES |
| | Claims | 1-13 | NO |
| Inventive step (IS) | Claims | | YES |
| | Claims | 1-13 | NO |
| Industrial applicability (IA) | Claims | 1-13 | YES |
| | Claims | | NO |
| 2. Citations and explanations: | | | |
| <p>The following documents have been shown in the ISR.</p> <p>Document 1: Dinara Daniel et al., Pathway of Apoptosis Induced in Jurkat T Lymphoblasts by Anti-HLA Class I Antibodies, Human Immunology, Vol. 65, pages 189 to 199, 2004 (see, particularly, page 197, left column, line 1 to right column, line 8)</p> <p>Document 2: Giuliana Cangemi et al., IFN-α mediates the up-regulation of HLA class I on melanoma cells without switching proteasome to immunoproteasome, International Immunology, Vol. 15, No. 12, pages 1415 to 1421, 2003 (see, particularly, page 1416, left column, lines 22 to 24)</p> <p>Document 3: O.R.Burrone et al., Stimulation of HLA-A, B, C by IFN-α. The derivation of Molt 4 variants and the differential expression of HLA-A, B, C subsets, The EMBO Journal, Vol. 4, No. 11, pages 2855 to 2860, 1085 (see, particularly, page 5, Table I.)</p> <p>Document 4: Naoki Kimura et al., 2D7 diabody bound to the $\alpha 2$ domain of HLA class I efficiently induced caspase-independent cell death against malignant and activated lymphoid cells, Biochemical and Biophysical Research Communications, Vol. 325, pages 1201 to 1209, 2004</p> <p>Document 5: Laurent Genestier et al., Fas-Independent Apoptosis of Activated T Cells Induced by Antibodies to the HLA Class I $\alpha 1$ Domain, Blood, Vol. 90, No. 9, pages 3629 to 3639, 1997</p> <p>Document 1 describes that the anti-HLA class I antibody is useful for inducing cell death to treat the tumor and that since expression of HLA is reduced in the tumor, expression of these tumor tissue compatible conjugates should be restored by a cytokine such as interferon γ.</p> <p>Accordingly, document 1 can be considered to describe that the interferon is used in combination for enhancing the cell death induction action of the anti-HLA class I antibody when the anti-HLA class I antibody is used as a medicine for inducing cell death to treat the tumor.</p> <p>Therefore, the subject matters of claims 1-13 of this international application do not appear to be novel or to involve an inventive step in view of document 1.</p> <p>In this connection, claims 1-13 do not describe that interferon α is used as an interferon and a specific antibody is used as the anti-HLA class I antibody, but documents 2 and 3 each describe that interferon α up-regulates expression of HLA class I on the cell as interferon γ does, and documents 4 and 5 each describe that various kinds of HLA class I antibodies disclosed in the specification of this international application induce cell death in the tumor. Therefore, these aspects are obvious to a person skilled in the art although they are specified in the claims from documents 1-5.</p> | | | |

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2006/309890

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Int.Cl.

A61P17/06(2006.01), A61P21/04(2006.01),
A61P25/00(2006.01), A61P29/00(2006.01),
A61P35/00(2006.01), A61P35/02(2006.01),
A61P37/02(2006.01), A61P43/00(2006.01)